

$$1) \begin{cases} V_X(Y_2 + Y_3) - V_A Y_2 - V_B Y_3 = 0 \\ V_X(Y_4 + Y_5) - V_B Y_4 = 0 \\ V_X Y_1 - V_A Y_1 = I_X \end{cases}$$

$$V_B = V_X \frac{Y_2 + Y_3}{Y_3} - V_A \frac{Y_2}{Y_3}$$

$$V_X(Y_4 + Y_5) - V_X \frac{Y_4(Y_2 + Y_3)}{Y_3} + V_A \frac{Y_2 Y_4}{Y_3} = 0$$

$$V_A = V_X \left(\frac{Y_2 + Y_3}{Y_2} - \frac{Y_3(Y_4 + Y_5)}{Y_2 Y_4} \right)$$

$$V_X \left(Y_1 + \frac{Y_3(Y_4 + Y_5)}{Y_2 Y_4} - \frac{Y_2 + Y_3}{Y_2} \right) = I_X$$

$$V_X \left(\frac{Y_1 Y_2 Y_4 + Y_3(Y_4 + Y_5) - Y_2 Y_4 - Y_3 Y_4}{Y_2 Y_4} \right) = I_X$$

$$\boxed{\frac{V_X}{I_X} = \frac{Y_2 Y_4}{Y_1 Y_3 Y_5}}$$

$$Y_2 = 5C_2, Y_4 = \frac{1}{R_4}, Y_1 = \frac{1}{A_1}, Y_3 = \frac{1}{R_3}, Y_5 = \frac{1}{R_5}$$

$$Z_X = S \text{leg} = S C R^2 \Rightarrow Z_X = S \text{leg} = \frac{5 C_2 R_1 R_3 R_5}{R_4}$$

$$\text{leg} = 1 \Rightarrow 1 = \frac{C_2 R_1 R_3 R_5}{R_4} \Rightarrow R_1 = R_3 = 10 \text{K}\Omega, R_4 = R_5 = 1 \text{K}\Omega //$$

$$1 = C_2 \cdot 100 \text{M}\Omega \Rightarrow C_2 = 10 \text{nF} //$$